ERITREA

RURAL ENTERPRISE INVESTMENT PARTNERSHIP

Cooperative Agreement No. 661-0009-4-00-6503-00

Final Report on Program Implementation

September 1996 – February 2005

Submitted by

ACDI/VOCA
May 2005

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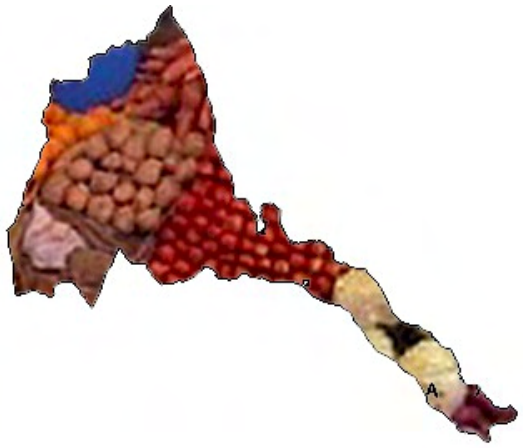
Washington, DC 20001

ACRONYM LIST

ACDI/VOCA	Formerly Agricultural Cooperative Development International and Volunteers in Overseas Cooperative Assistance
BDS	Business Development Services
CTO	Cognizant Technical Officer
EIF	Enterprise Investment Fund
FAO	Food and Agriculture Organization
FHIA	Honduran Agricultural Research Foundation
GSE	Government of the State of Eritrea
HQ	Headquarters
IPM	Integrated Pest Management
MOA	Ministry of Agriculture
NCEW	National Confederation of Eritrean Workers
REIP	Rural Enterprise Investment Partnership
REU	Rural Enterprise Unit
SME	Small and Medium Enterprise
UNDP	United Nations Development Program
USAID	United States Agency for International Development
USDA	United States Department of Agriculture



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BACKGROUND

In September 1996, ACDI/VOCA signed Cooperative Agreement number 661-0009-4-00-6503-00 with USAID to implement the *Rural Enterprise Investment Partnership (REIP)* program in Eritrea. The objective of the seven-component REIP program was to accelerate the growth of both agricultural and non-agricultural rural enterprises in Eritrea's primary "growth corridor"—the tarmac road from Massawa on the coast to Tessenei on the Sudanese border. As originally designed, ACDI/VOCA would 1) strengthen the operations and increase the rural outreach of the Commercial Bank of Eritrea (CBER); 2) manage the Rural Enterprise Unit (REU), delivering support services to small and medium enterprises; and 3) oversee the Enterprise Investment Fund (EIF), providing hard currency loans to small and medium enterprises (SMEs). This design was superseded during the third quarter of 1997 when USAID and the Government of the State of Eritrea (GSE) agreed that the enterprise development components of the project—the REU and the EIF—would be removed from ACDI/VOCA's portfolio and placed under the direct supervision of the GSE.

The implementation of REIP was seriously hampered by Eritrea's border war with Ethiopia, which necessitated substantial programmatic changes due to the mobilization of CBER staff, restrictions of movement within the country, and expatriate staff evacuations. Despite this, REIP was successful in helping the CBER overcome numerous operational and policy challenges. The development of a Credit Policy Manual, together with the creation and training of the Credit Administration Department, were one of the most important contributions of the REIP program. By the end of the initial project period in early 2001, interest rates were mandated with minimum and maximum rates, giving the CBER the ability to earn a return on risk. Ninety-day treasury bills were available, enabling the bank to earn 2.5 percent per annum on its surplus funds. The CBER received an exemption from the GSE motor pool, providing it with its own vehicles to meet its needs. A new Board of Directors was appointed that was more responsive to the bank's needs. Finally, REIP helped to establish the CBER's first formal in-house training facility and assisted with some of the equipment necessary to make it operational.

The second phase of the REIP program (2001-2005) was developed in response to continued delays in the demobilization of CBER staff, and focused on small and medium enterprise development in the horticulture sub-sector. An additional program component aimed to strengthen the cooperative development capacity of the REU and the National Confederation of Eritrean Workers (NCEW) in expectation of the imminent passing of the new commercial code, which included a subsection on cooperatives. ACDI/VOCA provided two technical advisors to work directly with the REU: Mr. Kevin Lombard joined the project as Horticulture Production Advisor in January 2003, and Agricultural Marketing Advisor Mr. Daniel de Reuck was fielded in April 2003. Due to the new focus on horticulture, the Ministry of Agriculture (MOA) gradually replaced the REU as the REIP program's primary counterpart.

PROJECT TIMELINE

September 1996	ACDI/VOCA signs a Cooperative Agreement with USAID for the Rural Enterprise Investment Partnership (REIP) program.
October 1996	Implementation begins with an ACDI/VOCA team of three expatriates: Ms. Sandra Blanchard (ACDI/VOCA Regional Representative), Mr. Michael A. O'Neill (Senior Banking Advisor) and Mr. Gavin Olney (Enterprise Advisor).
September 1997	The REIP agreement between USAID and GSE is signed.
May 1998	ACDI/VOCA's Senior Banking Advisor (SBA) is obliged to evacuate the country at the U.S. Embassy's request, and is not permitted to return for a period of 14 months.
April 2000	The SBA is evacuated at the U.S. Embassy's request and is not permitted to return for a period of four months.
April 2001	A two-year cost extension is awarded to: 1) continue training at the CBER, based upon the expectation of imminent demobilization; 2) provide short term technical assistance to the REU through the provision of volunteer consultants; and 3) build the capacity of the NCEW to formulate a cooperative law and establish and strengthen rural cooperatives.
March 2002	A team of ACDI/VOCA senior Business Development Services (BDS) specialists travels to Asmara to design Phase 2 of REIP to take into account reconstruction from the border conflict and reintegration of demobilized soldiers, in response to requests made by the CBER.
December 2002	ACDI/VOCA is awarded a one-year program extension to Phase 2, focusing on SME development in the horticulture sub-sector in addition to a cooperative development component.
December 2003	ACDI/VOCA receives a six-month, no-cost extension to implement a work plan based on short-term technical assistance in horticulture, with the construction of a banana demonstration farm as a key output of this period.
June 2004	An additional six-month, no-cost extension is granted to enable sufficient time to complete the new work plan.
December 2004	REIP receives one final extension through February 2005 for the completion of the banana demonstration farm, which was hindered by deficiencies in the original design by MOA engineers, delays in the shipment of materials and equipment, and high fuel prices.
February 2005	Project end date.

This final program report is divided into four separate sections corresponding to the four REIP project implementation counterparts: the Commercial Bank of Eritrea, the Rural

Enterprise Unit, the Ministry of Agriculture, and the National Confederation of Eritrean Workers.

I. COMMERCIAL BANK OF ERITREA

During the early part of 1997, the overall strategy for the CBER component was redefined to take account of the agreed GSE control of the REU and the EIF. Concentrating on the banking component, ACDI/VOCA identified inherent deficiencies in three major areas of CBER: inadequately defined credit and operational policies and procedures; a critical, continuing shortage of qualified staff; and a reliance on manual operating systems which were not able to cope with the business growth.

It is worth noting how these deficiencies had developed. CBER was formed in 1991 from seven branches of the Commercial Bank of Ethiopia and began operations by using the existing policies and procedures of that institution. Although it quickly became apparent that these policies and procedures were inconsistent with the objectives of the new nation, attempts between 1991 and 1996 to create a coherent set of policies and procedures were unsuccessful.

Between 1991 and 1996, CBER experienced consistent and substantial growth in deposits and loans without a corresponding growth in the staffing levels necessary to manage this growth. By 1998, the number of bank branches had more than doubled from seven to 15. Deposits and loans had each increased about 20 times from the 1991 base, but employee numbers increased by only 32 percent over the same period. This low staff growth was the result of several factors, the most important of which was an overall shallow skilled labor pool within Eritrea and the bank's inability to attract and keep experienced staff at the government mandated wage levels which were—and remain—well below remuneration levels in the commercial sector.

Moreover, the bank was far more successful in marshalling savings deposits than it was in making loans. At the end of 1998, the bank was operating at a loan-to-deposit ratio of 28.6 percent, although it needed a ratio in the region of 70-75 percent to maximize profitability. The low level of lending was the result of two interrelated factors: credit policies and procedures that were based on collateral rather than cash flows, and a critical shortage of credit officers.

Based on the Senior Banking Advisor's assessment of the bank's problems, a strategy was developed to address the deficiencies which prevented CBER from operating more profitably and from significantly expanding its financial services. The first step involved developing a written set of policies and procedures which were specific to Eritrea's needs. In December 1996, the SBA completed a new Credit Policy Manual for CBER in generic form. CBER's General Manager (GM) allowed seven of his senior staff to spend another week making the document Eritrea-specific, and the completed manual was submitted to the Board of Directors in January 1997.

Secondly, during May 1997, new credit staff were recruited and trained from among new university graduates since the bank's pay scale precluded the hiring of more experienced personnel. The GM of CBER agreed that up to 15 new university hires per year could be earmarked for credit training until the number of credit staff was raised by 75 over the next five years. 75 credit officers added to the existing 12 would allow the account load per officer to fall from up to 800 accounts per officer to a more practical and realistic 40-50 accounts per officer. The lower account loads were seen as a necessary prerequisite for credit personnel to switch from being collateral based lenders to being cash flow lenders who understand and follow the current business needs of each customer.

The 15 university graduates who were recruited and trained that first year were assigned to branches throughout the bank in September 1997. The intent was to supplement their classroom training with on-the-job training in their units and then to periodically bring them back to Asmara for advanced credit training. In 1998, another 15 trainees were recruited, but before they could begin their training in June, the war with Ethiopia broke out and they, along with most of the 1997 trainees, were conscripted into the military.

Thirdly, the REIP program focused on expanding CBER's financial services in the rural areas through a mobile kiosk banking program that would operate in market centers on a once or twice a week basis. This required first obtaining a GSE waiver to the vehicle policy of February 1997, which placed all vehicles owned by GSE entities into a centralized motor pool. Kiosk banking required the exclusive use of dedicated vehicles to be successful. By the time CBER received an exclusion from this policy in 1999, however, the war with Ethiopia precluded instituting the program for security reasons.

Fourthly, REIP assisted CBER in the computerization of the bank including the acquisition of necessary additional hardware. The REIP program called for the computerization of the outlying branches of CBER in the REIP target area, but this activity had to be suspended when the war started in 1998. At the headquarters office, after trying to develop software internally for over five years, CBER's computer department finally had to begin to look outside for the software necessary to computerize the bank operations. While successful in computerizing several individual departments of the bank, the computer staff was unable to link the departments together in one program and began to explore the introduction of an existing software package to accomplish this. It was not until 2000 that a solution was found through contracting with an Irish company, Kindle Computer Systems, Ltd. to set up a central facility to handle data for CBER, Bank of Eritrea, Housing and Commerce Bank and the Development Bank.

As is evident from the preceding review of the REIP strategy, the war between Ethiopia and Eritrea seriously hindered the implementation of REIP activities, and, naturally, CBER's overall performance was also drastically affected. During the first offensive, the SBA was evacuated in May 1998 under order of the US Embassy. The REIP program went on hold for the next 14 months until the SBA returned in July 1999. With the lifting of the evacuation order, there was an expectation that there would be a cessation of

hostilities between Eritrea and Ethiopia and at least a partial demobilization during 2000. Instead, there was a continuous escalation of hostilities. Between 1999 and early 2000, tensions continued to mount between Ethiopia and Eritrea with increased buildup of troops from both sides in the contested border areas. In April 2000, the 12th round of the draft took another group of bank staff into the army, exacerbating the already serious shortage of staff within the CBER. In mid-May, the CBER GM took the precautionary step of evacuating bank staff, funds, records, and moveable equipment from the branches in Tessenei, Barentu, Mendefera and Akkordat just a few days before the Ethiopians invaded these areas. On May 21, the American Embassy mandated a second evacuation of non-essential personnel and the SBA was unable to return until four months later.

Due to the "scorched earth" policy of the Ethiopian army when it invaded Gash Barka and Debub, the three CBER branches in those areas, Tessenei, Barentu, and Adi Keyh, had loan losses of close to 100 percent with little possibility of any significant eventual recovery. The bank estimated the losses in those three branches at about 140 million Nakfa ($14.7 million) with another 280 million Nakfa ($29.5 million) of war related losses bank-wide.

In spite of the significant changes to the original REIP program design early on in implementation, and the continuing dire consequences of the war with Ethiopia, there were a number of areas where the REIP program achieved reasonable results.

The CBER faced a number of GSE policies that hampered its operations. Chief among these were:

a) Mandated interest rates for various business sectors that did not allow flexibility within a sector and were often not in accordance with the risks the bank was experiencing;

b) No options for the CBER to earn anything on its surplus deposits;

c) Moving of the bank's vehicles into the GSE motor pool;

d) No buildup of capital within the bank as any profits remaining after taxes were declared as dividends at the end of the year;

e) A board of directors that was inactive and unresponsive to the needs of the bank;

f) A pay package for GSE employees, including the CBER, which was well below the scale for commercial companies in Eritrea.

Through the preparation of a five-year plan, these problems were brought into the open and discussed numerous times with the GSE. Over the initial REIP program period, all but the last were modified or eliminated. By 2001, interest rates were mandated as a

minimum rate and maximum rate which could be charged, giving the CBER the ability to obtain a return on risks. 90-day treasury bills were available for the bank to earn 2.5 percent p.a. on its surplus funds. The CBER received an exemption from the GSE motor pool and had its own vehicles to meet its needs. The GSE also agreed with the World Bank to allow the bank's capital to build up through earnings or an equity injection until it attained an 8 percent ratio of capital to risk adjusted assets and to accomplish this by 2005. A new Board of Directors was appointed which was more responsive to the bank's needs.

The only policy that had not changed was the tying of the bank's remuneration package with that of the GSE at levels well below the market. While one can understand the GSE's reluctance to establish a multi-tiered wage structure for its various departments or owned entities, this continued to make it difficult for the bank to attain the staff levels it needed to modernize and normalize its operations.

One of the most important contributions of REIP over this period was the creation and training of the Credit Administration Department of CBER. The Credit Administration Department became the unifying focal point for credit within CBER, and implemented major elements of the policies outlined in the Credit Policy Manual.

REIP also helped to establish the CBER's first formal in-house training facility and assisted with some of the equipment necessary to make it operational. During the final months of Phase I, the SBA completed the development of several training programs for credit personnel. The new training center also included video training facilities and the bank obtained a number of video training cassettes to teach its staff the major off-the-shelf software programs. This training center was the core of the strategy to increase and upgrade staff during the coming years and was to be the primary thrust of the requested REIP extension program.

In July of 2000 shortly before the SBA returned to Eritrea, USAID invoked its Crisis Modifier Program which accelerated the availability of funds under its various programs. For REIP, $5 million was diverted from the EIF and earmarked to implement an SBA-designed emergency loan program for Gash Barka and Debub, the two areas most affected by the Ethiopian occupation. Just under $4 million was disbursed under this program between August 2000 and February 2001. The program had three major elements in the design. First, the loans, unlike most CBER credit, did not require collateral. Second, loans were made to known business people in the area to reestablish their businesses to the level they had reached prior to the Ethiopian occupation. Third, any monies CBER collected back under this program went directly to their capital fund, giving them some relief from the massive losses they had incurred as a result of the war. The program was very well received by all the effected parties.

A modified five-year strategic plan prepared by the SBA for the CBER was accepted by the World Bank. This was required as part of the process of obtaining a commitment from the World Bank for funding to CBER of $27 million for hard currency lending programs.

When the April 2001 extension proposal was submitted to USAID, the CBER General Manager believed that his staff would be returning to the bank shortly, and that he would also be able to recruit new university graduates to be trained as credit officers. The extension therefore focused on training programs for credit officers to develop the skills necessary for the transition from collateral-based lending to cash flow lending. A year later, CBER's operations were still severely hampered by a number of constraints, including the CBER's failure to recruit new university graduates as planned in order to mitigate the effects of staff shortages; the absence of critical staff who were not yet demobilized, such as the CBER's Credit Administrator; and the delay in the automation of the bank by Kindle System. ACDI/VOCA was therefore obliged to adjust its approach to training and technical assistance in order to remain effective, and actively contributed to technical assistance in computer training in an attempt to overcome these impediments.

II. RURAL ENTERPRISE UNIT

Recognizing that improved business services to SMEs could reduce the costs and risks of lending through improved business plan development, market information and management assistance, the CBER and the REU acknowledged their mutual interest in strengthening the "banker to borrower" relationship by improving the quality of services available to SMEs. Therefore, during the second quarter of 2002, at the request of the CBER's General Manager and Credit Administrator, ACDI/VOCA revised the REIP project work plan to reorient training activities towards building the skills of private consultants, REU staff and credit officers in order to raise the quality of feasibility studies and business plans submitted to the CBER, contributing to the efficiency of the credit application and review process.

Farmer training by ACDI/VOCA staff and MOA

1. Poultry Component

In May 2002, ACDI/VOCA volunteer consultant Sharon Fee, former poultry advisor to the Government of Botswana and Agricultural Development Officer for USAID in Somalia, Sudan and Tanzania, conducted a three-week assignment in Asmara to design a training manual for the Eritrean small-scale commercial poultry sector.

During the assignment, Ms. Fee worked with REU staff as well as with Wayne Kessler, the local consultant who originally assisted the REU in designing its project targeting Eritrea's nascent commercial poultry sector. The REU staff and local consultant assisted the volunteer in setting up meetings with farmers to discuss their concerns and ideas, to be incorporated into the training modules. In addition, Ms. Fee made several field trips to visit poultry farms around Asmara. Upon her return to the US, the volunteer developed

the training modules, each of which included a teaching manual and a participant workbook, to be used as training materials in subsequent volunteer assignments. The four modules were as follows:

- Poultry Farm Management
- Nutrition
- Marketing
- Hygiene and Disease Control

Module 1: Poultry Farm Management

The first of these modules was presented during September and October of 2002 by volunteer poultry specialist Dr. Kendrick Hollemann, former professor in Poultry Science at Oregon State University, National Poultry Science Program Leader with the US Department of Agriculture (USDA), and Team Leader for multi-year poultry projects in Yemen and Kuwait. Dr. Holleman gave a three-day training on poultry farm management to three core farmers and four REU staff, covering the following topics:

1) Egg layer management
2) Broiler and chick growing
3) Proper use of feed and feed quality issues
4) Cost of egg production and profitability considerations
5) Space requirements for poultry production, particularly with regard to disease control
6) Proper management practices
7) Business planning
8) Enterprise budgeting
9) Financial management and cash flow

When Dr. Holleman visited Mr. Omar Yussuf, owner of the 6,500-bird Adal Poultry Farm in Keren, he noticed that the layer houses were constructed with a shed type roof with no ventilation on the high side. The volunteer explained that for proper ventilation, at least two walls must have openings, and Mr. Omar subsequently made improvements to allow for adequate ventilation for his chickens. In addition, Dr. Holleman observed that there were too few nests, causing excess egg breakage, increased egg eating, more floor eggs and more dirty eggs, all of which could significantly reduce the total number of eggs collected and sold each day. Impressed by the recommendation that there be one nest per four hens, Mr. Omar increased the number of nests to ensure maximum egg sales.

After the three days of training, the volunteer and the participants visited ten commercial farms in and outside of Asmara (Dekemhare, Keren, Mendefera and Addi Abeto). During his field trips to the poultry farms, Dr. Holleman identified 18 key problems and made numerous practical recommendations, some of which were put into practice before he even left the country (see text box, above).

Module 2: Nutrition

Dr. Kendrick Holleman returned to Eritrea in November 2002 to conduct a three-day training on poultry nutrition based on the second module of the poultry sector training manual produced by Ms. Sharon Fee. The training targeted REU staff, six core farmers, seven MOA Extension Service Agencies from three zobas (Maakel, Debub and Anseba) and a member of the MOA Research Department. Course topics included:

1) Preparation of mash
2) Reducing spillage
3) Basic dietary components
4) Phase feeding
5) Dietary energy

During the training, participants received a demonstration of least-cost feed formulation using a computer program available on the internet. Following the training, Dr. Holleman and the participants visited six poultry farms and one feed manufacturing company, and he made practical recommendations concerning the issues identified at the farms.

Module 3: Marketing

In January 2003, Dr. Holleman returned to Eritrea for the third and final time to conduct training on eggs and poultry marketing with the REU, again based on the training manual prepared by Sharon Fee. Topics covered in the eggs and meat marketing included:

1) Marketing plan and strategy
2) Egg quality factors
3) Egg quality determination
4) Packaging and identification
5) Poultry meat processing
6) Cooling
7) Packaging and labeling

Once again, Dr. Holleman concluded the training with recommendations, which were eagerly adopted by the training participants. Mr. Yusuf Abdalla, for instance, owner of the 15,000-bird Mother Poultry Farm in Mendefera-Debub, reduced feed wastage to a minimum amount in his farm by adjusting the feeder height to the level of the birds' backs and by introducing inside lips on feeders. Mr. Yusuf also followed Dr. Holleman's advice to cull his non-productive hens, which were wasters of feed, and market them for meat.

In addition to the main training module, and at the request of participants, the volunteer gave a three-day training on poultry management from Module I of the manual. 15 participants from the commercial poultry sector, the REU and the Ministry of Agriculture attended the six days of training.

Module 4: Hygiene and Disease Control

In May 2003, volunteer Mr. Robert Murphy, an expert with 30 years of experience in the poultry industry, gave a three-day training on poultry health and farm hygiene based on the training manual prepared by Ms. Fee. Prior to the training, Mr. Murphy accompanied participants on visits to 11 poultry farms where he identified weaknesses and discussed approaches to addressing these challenges. Training topics included:

1) Weapons against disease
2) Poultry health problems
3) How to handle contagious disease
4) Biosecurity management
5) Performing post-mortem examinations

The training, which was attended by 16 participants from the MOA, commercial poultry farmers, and the REU, concluded with recommendations and a group discussion on how to build an ideal poultry farm.

Additional Trainings

In addition to the four basic poultry training modules designed by the first poultry volunteer, two supplementary volunteer assignments were conducted in this sub-sector, providing training through the REU to chick brooders/importers and feed producers. All volunteers were briefed and debriefed at the USAID mission at the start and end of their assignments, and submitted reports to ACDI/VOCA, which were then shared with USAID.

Chick Producers/Importers: This assignment was conducted in October 2002 by poultry specialist David Mitchell, who worked with four commercial chick importers to deal with mortality and management. Mr. Mitchell visited 18 commercial egg layer farmers, feed manufacturers and manufacturers of feeders and waterers. Poultry farms visited included farms in and outside of Asmara (Dekemhare, Mendefera, Keren, Hagaz and Beleza). Following his field trips, the volunteer identified biosecurity, feeder management, waterers, nest management, floor space, and beak trimming as issues requiring further attention, and made specific recommendations in his final report.

Poultry Feed Producers: In October and November 2002, REIP hosted Dr. Abraham Woldeghebriel, a nutritionist from Lincoln University with over 12 years of teaching experience in principles of nutrition, management, feed and feeding. Prior to his farm visits, Dr. Woldghebriel met with the farmers to discuss nutrition and other poultry production and management practices. In addition, the volunteer visited seven commercial and semi-commercial poultry farms and three feed producers. During these visits, he noticed problems related to the lack of consistent feed supply, excessive feed waste, little or no culling, cannibalism, and lack of vaccines. Dr. Woldeghebriel made several recommendations to address the problems, many of which were subsequently implemented. During this training, the application of a hand-held calculator in feed formulation was demonstrated and the potential use of computer-based feed formulation software was introduced. The concept of least-cost ration was also highlighted.

2. Sub-Sector Analyses

The REIP sub-sector analyses were conceived to fill a major need identified in discussions between ACDI/VOCA business development specialists and REU staff in March 2002—namely that one factor contributing to the low quality of feasibility studies was that market analysis for any sector of the Eritrean economy was extremely limited, if existent at all. It was found that because of the time consuming and expensive process of

conducting a sub-sector market study, only the largest enterprises could afford the cost of a thorough market analysis, and even those with the capacity to conduct such a study did not seem to realize the added value. The purpose of the sub-sector training and analysis conducted under REIP was two-fold: 1) to provide Eritrean SMEs and investors with detailed information on market opportunities in various high potential sectors in order to enable them to develop substantive feasibility studies and business plans; and 2) to build the capacity of REU staff and private consultants to undertake additional studies.

Fisheries and small-scale construction sub-sector analyses

The market analyses conducted in June 2002 focused on two nascent sub-sectors in the Eritrean economy, identified as having high growth potential: fisheries and small-scale construction. ACDI/VOCA provided a volunteer specialist for each of these sub-sectors to lead teams of selected local private business consultants and REU staff: Dr. Philip Giovannini, a fisheries biologist and independent consultant; and Mr. James Carr, Associate Professor of Construction Technology and former owner/manager of a construction company. The beneficiaries of these analyses were the private consultants and their clients.

The sub-sector analysis training and study was led by ACDI/VOCA consultant Mr. James Bell, a sub-sector market assessment specialist, who served as Team Leader for the month-long project. The Team Leader was responsible for providing training in market analysis techniques, overseeing the two teams, and guiding the synthesis of information collected in the two sub-sector analyses into the final report.

The sub-sector analyses began with a three-day workshop for private business consultants and staff of the REU, the Ministry of Fisheries and the Chamber of Commerce, at which training was provided in sub-sector analysis methodology. Upon arrival of the ACDI/VOCA volunteer specialists, teams were formed according to the two sub-sectors and the market analysis was conducted. The fisheries team was composed of the ACDI/VOCA volunteer, two REU staff members and two staff members of the Ministry of Fisheries. The team conducted interviews with key informants on a field trip to Massawa, the main fishing center on the Red Sea coast. The small-scale construction team included members of the Chamber of Commerce, two private consultants and one consultant from the REU. The team also traveled to Massawa to interview individuals involved in housing and other small-scale construction.

ACDI/VOCA Headquarters staff provided guidance to the Team Leader in preparation for the assignment, and ACDI/VOCA business development specialist Mr. Olaf Kula served as the senior technical advisor for the sub-sector analysis, contributing crucial technical training to strengthen the quality of the teams' fieldwork in order to produce more thorough analyses.

Horticulture sub-sector analysis

During January and February of 2003, ACDI/VOCA conducted a horticulture sub-sector analysis with the aim of providing Eritrean SMEs and investors with detailed information on market opportunities throughout the horticulture value chain. Prior to conducting the

study, ACDI/VOCA technical specialists provided training on sub-sector methodology to a team consisting of three members of the REU staff, two MOA officials, and a private consultant from Eri-Fruits PLC, as well as ACDI/VOCA's Horticulture Production Advisor Mr. Lombard. The team, led by ACDI/VOCA consultant Mr. Stanley Karuga, spent three weeks conducting field-level interviews in the main producing areas of Gash Barka, Anseba, Maekel and Debub zobas and the main consuming areas of Asmara and Keren. Interviewees included field staff of the Ministry of Agriculture, commercial input suppliers, commercial farmers, farmer associations, traditional farmers, parastatals (Sawa Agro-industries, Afhimbol Agro-industry, Elabered Estate, Barka Canneries), transporters, NGOs (CARE, ACORD and Haben), donors (USAID, FAO, UNDP), consultants, financial institutions, private foreign investors, wholesalers and retailers, among others. A half-day stakeholder workshop was held in February 2003 to present results and table discussions with key stakeholders and participants.

The outcome of the sub-sector study was summarized and presented to the REU, which then shared it with USAID, and the subsequent *Horticulture Sub-Sector Analysis and Business Investment Opportunity Guide* was submitted to USAID as well. The study and analysis indicated that the Eritrean horticulture sub-sector was predominantly serving the domestic market. Bananas, tomatoes, oranges and onions dominated the sub-sector both in terms of volume of production and hectares cultivated. The horticultural sub-sector was revealed to be a major source of income for small to medium sized farmers as well as a large number of other actors, especially wholesalers, retailers and transporters. The MOA was found to be a major player given its role in the provision of a wide range of inputs to both commercial farmers and parastatals. Opportunities were identified for training of farmers (with a priority focus on REIP loan recipients and other promising farmers in the Green Belt Area[1]) in horticulture production (seed selection, soil and water conservation, pest management, etc.), post-harvest handling and value addition, and technical assistance in marketing linkages. These findings formed the basis of the horticulture component of the REIP extension work plan, submitted to USAID in April 2003.

3. Horticulture Component

The 2003 REIP work plan refocused ACDI/VOCA's activities on two core program components, which were considered a priority by the MOA: alternative crops (primarily potatoes and onions) in the Green Belt Area and banana production in the Tekreret area west of Asmara. Both of these components received short-term technical assistance from ACDI/VOCA US-based volunteers, as well as long-term technical assistance from Horticulture Production Advisor Kevin Lombard and Agricultural Marketing Advisor Daniel de Reuck, who arrived in Eritrea in early 2003 to work with REU and MOA Horticulture Department. Many of these activities were implemented as a direct follow-up to ACDI/VOCA's *Horticultural Sub-Sector Analysis and Business Investment Opportunity Guide*.

[1] The "Green Belt" is defined as the area immediately surrounding the city of Asmara, which according to the REU produces approximately 50 percent of the vegetables sold in the capital.

Onions

In September 2003, volunteer Ray Osburn conducted several training sessions on onion crop and seed production. Held in two main producing areas of the Lowlands, these trainings identified constraints and provided recommendations. The trainings were attended by 27 farmers and three MOA staff in the Keren/Hagaz area, and by 17 farmers and three MOA staff in the Akkordat area.

Professor Lynn Jensen, County Extension Faculty from the Department of Crop and Soil Science at Oregon State University, completed a volunteer assignment in Onion Pest Management and Disease Control in May 2004. Upon arrival in country, Mr. Jensen met with Mr. Huruy Asghedom, Director General of Agricultural Promotion and Development Department at the MOA, and Mr. Ahmed Muhedin, MOA Horticulturalist. Mr. Muhedin provided the volunteer with an introductory overview of the onion sub-sector in Eritrea. Mr. Jensen then began his assignment by visiting several onion-growing areas as well as the Research Department in Halhale in order to identify constraints faced by onion growers. He also visited vegetable markets in Asmara and Keren in an effort to determine the quality of produce available to consumers. Following this research, Mr. Jensen conducted a two-day training workshop for 14 MOA extension agents in Halhale Research Department, and to 21 MOA extension agents and growers in Keren. These workshops covered production and Integrated Pest Management (IPM) techniques and suggestions for varietal screenings, as well as irrigation management and fertilization techniques. The volunteer concluded the training with recommendations on pest management and disease control, and donated several books to the MOA, with the expectation that the information be transferred to extension agents and farmers as needed.

Potatoes

ACDI/VOCA volunteer Pat Rowe completed an assignment on potato production from late October to mid-November 2003. The training addressed problems relating to the proper cultivation practices for potatoes. The training was attended by 27 farmers, who received technical recommendations from the volunteer as part of the assignment. MOA and ACDI/VOCA staff also received potato production field manuals.

Green Belt

The aim of the Green Belt component was to facilitate vegetable marketing linkages for Green Belt villages, particularly into high-value domestic niche markets such as the Intercontinental Hotel in Asmara which purchased many of its vegetables from the Asmara market in addition to importing fruits and vegetables, many of which could be grown locally.

Adi Lamza fields

In May and June 2003, ACDI/VOCA and the MOA visited Adi Lamza, a village of several

thousand inhabitants, located approximately 8 km south of Asmara. The site was identified as a potential location for a direct market linkage to the Intercontinental Hotel because of its proximity to Asmara, continuous supply of water, and progressive approach to year-round cultivation of vegetables. Vegetable crop production under irrigation stood at 20 hectares, with the potential to expand to 45 hectares. The proposal of a direct marketing linkage between Adi Lamza and the Intercontinental for the purchase of vegetables was well received by both parties. Subsequent to these initial visits, Mr. Paul Degrève, Procurement Manager from the Intercontinental, traveled to Addi Lamza in order to access crop quality (washing and grading methods), variety diversification, quantity, weekly harvest operations, transport methods and delivery frequency. Mr. Degrève and Mr. Weldeab Woldeyohannes, the Adi Lamza chairman, tentatively agreed to a three-times weekly delivery at a price between wholesale and retail.

Tomatoes packed for transport. From L to R: Mr. Ameri (Intercontinental) Weldeab Woldeyohannes (Lamza), Paul Degrève (Intercontinental), and Daniel de Reuck (ACDI/VOCA)

The REU was involved in order to assess the feasibility of including the Adi Lamza Association within the REU Loan Recipients scheme. With the cooperation of the MOA and REU, a workshop was conducted for the farmers of Adi Lamza to discuss specific activities to improve crop patterns based on these market demands. Outreach activities agreed upon included, among others, the introduction of crop scheduling, improved market specific seed, and low plastic tunnels for the protection of crops during the frost season.

In the following quarter, the construction of a demonstration plastic greenhouse at Adi Lamza was completed. Local farmers participated in its construction and in planting two varieties of tomato for a trial. The farmers also participated in a half-day field trip to other sites around the Green Belt of Asmara where this technology was already in use.

Transportation to Lamza center by mule train for pickup by truck in the evening

The Green Belt direct marketing agreement was not finalized under the REIP project due to the farmers' preference for daily cash payments rather than the weekly payments offered by the Intercontinental. Nevertheless, future linkages are possible, and have the potential to significantly impact the 121 farmers and their extended families living in Adi Lamza, offering them the opportunity to raise their living standards through higher revenue generated from the sale of crops at higher than wholesale prices by bypassing marketing intermediaries. Additionally, the culture of market specific vegetable production that was introduced can offer farmers opportunities to find niche markets and garner higher prices for their crops.

Bananas

A meeting with the Minister of Agriculture in April 2003 revealed the MOA's desire to develop the banana sector by focusing on production and post-harvest techniques. Based on this meeting, it was decided that technical assistance provided to the REU should focus as a priority on this high potential crop, possibly even for export. The ACDI/VOCA team began focusing on producing simple Tigrinya training materials, tailored specifically to banana growers, with colored illustrations. The materials were produced with the objective of increasing banana quality for the local market, thereby reducing the fluctuations in production and prices, with a view to future export also.

Banana production

In May 2003, the ACDI/VOCA long-term advisors conducted a three-day training on banana production to 35 farmers at the Sheik Addi Humed Banana Association Farm in Akkordat. The training covered a variety of topics, including growth cycle, corm, suckers, roots, pseudostem and leaves, and inflorescence.

In the third quarter of 2003, the ACDI/VOCA technical advisors completed two pocket reference guides for banana growers, entitled *Green Banana Defects* and *Banana Production and Post Harvest, A Field Guide Book*. These booklets, which were submitted to the MOA for distribution and subsequently translated into Arabic and Tigrinya, contained recommendations for farmers on banana quality improvements. Following the translation of the guides into Arabic, REIP staff conducted a workshop for 10 banana growers and three MOA extension agents in Akkordat in order to assess the appropriateness of the Arabic translation for the level of the target group and make any adjustments necessary.

In November 2003, REIP hosted volunteer Henry Winogrond, who conducted two training sessions on banana ripening for four MOA staff and three banana ripeners. The first training session was spent reviewing the materials provided to the trainees, with detailed attention paid to the *Dole Ripening Manual.* The second session was spent visiting virtually every banana ripening facility in Asmara, assessing their capacity and making recommendations to maximize their usage. Each participant was given copies of the following relevant technical materials:

- The *Dole Ripening Manual*, an excellent tool that embodies the best of modern ripening practices.
- *Banana Ripening Rooms and Ripening Procedures*, a very detailed report written approximately 20 years ago, but containing information relevant to Eritrean ripeners given the capacity of the Eritrean banana industry at present.
- Color charts indicating banana color preferences for the North American and Northern European markets.

During his assignment, the volunteer also visited the important ripening facilities in Asmara, Keren, and Mendefera and made recommendations regarding their improvement and usage.

Two training modules were drafted and discussed with MOA and FAO counterparts for delivery of training in May 2003. The first and second modules covered areas of banana morphology and plant material selection, respectively. Translation of the first module was made in Tigrinya for distribution. The Dighe Banana Growers' Association was chosen as the target group for training due to their potential receptiveness to change during a trip in mid-May to Akkordat. A progressive farmer among this group generously donated plots in an existing field under cultivation in addition to a newly levelled site in order to conduct training activities adapted to local methods in parallel with those commonly undertaken in banana exporting nations. During the training of 35 farmers of the association conducted by the long-term technical advisors on the site at the end of May, discussions were animated in regard to the introduction of new tools and techniques. The group took study trips to the MOA Tekreret Banana Research Station to view banana cultivar introductions undertaken by the MOA and to Elabered Estate Farm.

Banana post-harvest handling

The post-harvest handling aspect of the banana component was implemented in large part by ACDI/VOCA consultant Mr. Robert Maloney, who completed a total of three assignments in Eritrea over the course of eight months. During his first assignment in June 2003, Mr. Maloney worked in collaboration with the MOA's Horticulture Department and with banana growers, giving a practical training to 35 farmers from the Akkordat area and 10 core farmers from Tessenei on proper post-harvest handling techniques for banana picking, grading and handling in packing stations, packing, transporting and storing.

In November and December 2003, Mr. Maloney returned to Eritrea to train 15 banana growers on proper banana packing techniques, using the newly introduced system at the Tekreret farm. As a result of this training, farmers learned two systems of packing bananas: the cluster pack and the single-finger pack. Using these techniques they were able to pack between 80 and 90 crates of bananas. The training sessions were well received by the farmers and the MOA in Barentu and Akkordat, as well as by the central MOA representatives in Asmara who attended.

Mr. Maloney returned in January 2004 for his third and final consulting assignment to conduct a banana marketing trial, with the aim of helping the Adi Sheik Humed Banana

Producers' Association to introduce their improved products to the domestic market. Potential buyers, such as the Intercontinental Hotel, United Nations military contingent, and supermarkets, were given sample crates of bananas and were enthusiastic about the possibility of buying better quality fruit.

Banana packing and marketing

During a trip to Akkordat and Tekreret in the third quarter of 2003, Mr. Lombard and Mr De Reuck discussed a proposal to renovate a banana packing shed with association members and the MOA. Located on the farm site of the Addi Sheik Humed Banana Producers' Association, the renovated shed was to serve as a pilot plant for the improvement of post harvest banana quality. The renovation was completed during the fourth quarter of 2003 with the help of local farmers, and the shed served as the training base during the visit of banana post-harvest handling consultant Robert Maloney.

The banana marketing trial designed by consultant Bob Maloney sought to demonstrate to growers the existence of a market for their improved bananas. Farmers were given plastic sheets and cartons. In addition, two wheelbarrows were given to the Banana Growers' Association in Addi Sheik Hummed for bringing the banana stems from the field to the packing shed. After the completion of the packing shed renovation, the farmers began to coordinate with various supermarkets and hotels for bulk supply orders of bananas, in order to reduce transportation expenses.

Completed banana packing station in Tekreret

The banana marketing trial was initiated, but fell short of its target due to the limited capacity of the association in addition to transportation constraints. The association made two sales to Elabered Estate in Asmara, but then opted to discontinue the trial, as the cost of transporting plastic crates from Asmara to Akkordat was considered prohibitive. Nevertheless, the identification of critical constraints leaves the door open for private entrepreneurship to respond to these gaps in the value chain.

The culmination of the banana component of the REIP project was a banana demonstration farm, constructed near Akkordat with the MOA as the key project counterpart (see Section IV below).

III. NATIONAL CONFEDERATION OF ERITREAN WORKERS

The NCEW was mandated by the Government of Eritrea to coordinate the overall development of cooperatives in the country. NCEW chaired the working group that drafted the national cooperative law after an extensive study phase which included visits to countries in Africa and elsewhere with strong cooperative movements. The working group then became responsible for coordinating cooperative policy. One of the objectives of NCEW is to actively further the development of cooperatives in rural areas through training and technical assistance to farmers' associations and rural workers. The NCEW has been supported in its efforts by a number of donors and international organizations, including the International Labor Organization.

In March 1997, ACDI/VOCA consultant Richard Magnuson traveled to Eritrea for six weeks to work with the NCEW on drafting the new cooperative law. Mr. Magnuson delivered a workshop in Asmara with NCEW staff and appropriate government ministries. While the absence of a cooperative law in Eritrea presented a significant challenge to expanding the scope of our cooperative development activities, ACDI/VOCA remained deeply committed to assisting the development of democratic member-owned cooperatives within the current constraints of the Eritrean legal framework, by continuing to work to maximize the capacity of the NCEW to support agricultural cooperatives.

In May 2002, ACDI/VOCA provided a consultant, Douglas Bishop, to design a training manual on Eritrean cooperative development. This project culminated in a 500-page training guide, divided into modules addressing cooperative development, strategic planning, business plans, marketing, bookkeeping and accounting. These modules include detailed training outlines and extensive supplementary resources. ACDI/VOCA subsequently provided three volunteers who have delivered three of the four modules to NCEW staff, beekeepers' associations, REU staff, Ministry of Fisheries, Trade and Industry personnel, and other government employees (see further details below). The response to these trainings delivered by ACDI/VOCA volunteer consultants was enthusiastic, with higher than anticipated attendance and strong participation in the sessions. A solid foundational understanding of the principles and practices of cooperatives was laid with staff from a variety of government ministries and representatives of Eritrean membership organizations.

Module 1: Introduction and Purpose of Cooperatives

In September and October 2002, the NCEW hosted volunteer Gerald Nolte, a former professor of Agricultural Economics at the University of Wisconsin, with a strong background in cooperative development and international work experience in nine countries. Dr. Nolte provided training based on Module 1 of Dr. Bishop's manual to 58 participants (42 men and 16 women) consisting of NCEW staff, Ministry of Fisheries, Trade and Industry staff, beekeepers' associations members, REU staff and other government personnel. A high level of interest in the cooperative training led to an increase in the number of participants to almost double the originally intended figure of 35.

Complementing the module designed by Dr. Bishop with materials from the Rural Business Service of the USDA and slides on strategic planning for cooperatives produced by the Cooperative and Marketing Extension Specialist for the University of Wisconsin, Professor Nolte conducted six days of training, divided into two three-day units as follows:

Unit 1: *Introduction and Purpose of Cooperatives*
- 1A Different Forms of Business
- 1B What are Cooperatives?
- 1C Basic Principles of Cooperatives
- 1D Benefits and Limitations of Cooperatives

Unit 2: *It's People that Makes a Cooperative Function Efficiently*
- 2A The Members Make a Cooperative Work
- 2B What Cooperative Directors Do in Cooperatives
- 2C What Cooperative Managers Do
- 2D What Cooperative Employees Do
- 2E Preparing a Vision and Mission Statement for Your Cooperative
- 2F Strategic Planning for Cooperatives

In response to the interest of the training participants, the volunteer also presented income statements, balance sheets and cash flows, issues of ownership, control and finance in cooperatives. During the six days of training, participants demonstrated a keen interest in the topics covered, and were eager to learn more about cooperatives in the future.

Module 2: Cooperative Marketing

In December 2002, Mr. John Derek Semida, a volunteer with decades of experience in cooperative development, conducted training on cooperative marketing. The volunteer conducted two training workshops of three days each. The first workshop was attended by 21 participants (six women, 15 men) from NCEW, Ministry of Fisheries, Trade and Industry staff and beekeepers' association members. The second workshop was attended by 41 participants (ten women, 31 men) from NCEW, Ministries of Agriculture and Fisheries, and share companies. Participants came from several different zobas, including Anseba, Debub, and Gash Barka.

Topics covered in the training course included:

1) Introduction to Cooperative Marketing
2) The Principles of Marketing
3) Developing a Marketing Plan
4) Developing Monitoring and Evaluation Criteria for Marketing Plans

Module 3: Accounting and Bookkeeping

Volunteer Mr. Johnney L. Williams, a Certified Public Accountant, conducted two training workshops on accounting and bookkeeping for agricultural cooperatives in

March 2003. The workshops were attended by 45 participants (12 women, 33 men) from the NCEW, Ministry of Fisheries, Trade and Industry staff and beekeepers' association, as well as the Ministry of Local Government and Ministry of Agriculture. The participants were selected based on their involvement in pre-cooperatives and their potential as cooperative organizers and helpers in developing cooperatives.

The subjects covered during this training were the following:

1) Balance Sheet
2) Income Statement
3) Statement of Cash Flow
4) General Ledger
5) Patronage
6) Member Accounts
7) Retained Earnings

Module 4: Cooperative Policy and Legal Framework

During the month of May 2003, NCEW hosted volunteer Mr. Steven Johnson who gave a four-day training of trainers on Cooperative Policy and Legal Framework. The workshop was attended by 14 participants (four women, 10 men) who had participated in the previous training on cooperatives and had a background in cooperative policy and law. The participants were NCEW staff and personnel from various Ministries, such as Justice, Agriculture and Fisheries.

The subjects covered during this training were:

1) Similarities and differences between cooperatives and other forms of business entities
2) Duties of the board of directors
3) Duties of officers and management
4) Legal privileges of cooperatives
5) Assets of cooperatives
6) Distribution of net profits
7) Audits and inspections
8) Dissolution of cooperatives

In addition to the study of these subjects, the participants were given the opportunity to practice their learning during group exercises in preparing legally required cooperative documents and in conducting organizational meetings.

Cooperative Training Materials

The REIP program contracted with People Designs, a US-based firm that specializes in creating educational and training materials, to produce cooperative training materials for the NCEW. Materials produced through this firm and submitted to the NCEW included Tigrinya and Arabic translations of the training booklet entitled *The Role of the Board of Directors* as well as Tigrinya and Arabic versions of the training manual entitled

Members make a Cooperative Work. These materials, which were based on the manual developed by Dr. Bishop in April 2002, were distributed and are available at the NCEW for reprint and more widespread distribution.

IV. MINISTRY OF AGRICULTURE

1. Israel agricultural marketing study tour

Three members of the Gash Barka branches of the MOA (Mr. Habtewold Wolday Hamde, Ms. Tinsae Abraham Ghebray, and Mr. Kessete Ghebreyohannes) participated in an agricultural marketing study tour to Israel for two weeks in June 2003, led by HQ Project Coordinator Adina Saperstein and horticultural marketing specialist Chumi Yanai. Through meetings with participants from every level of the value chain (from grower to exporter), these representatives were introduced to the model of market-driven agricultural innovation initiated in the Israeli agricultural sector over the last several decades. Upon their return to Eritrea, the three MOA participants met with the Israeli Ambassador and REIP CTO Dr. Michael Wyzan, to brief them on their experience.

Plastic greenhouses observed on Israel study tour

Key stakeholders visited during the study tour included individual family growers, growers' organizations and cooperatives, a supermarket chain, a private exporting company, exporting cooperatives, and the national export company, which is now run as a cooperative. These meetings led to a concluding discussion among the participants which attempted to develop a strategy for the Eritrean agricultural sector, and particularly the MOA's role in this process. The discussion also provided the basis for a scope of work for a viability assessment of production and marketing of potential horticultural export crops, which was initially designed to be a REIP consultancy. The assessment was to include capacity for production, post-harvest handling, transport, and investment in specific regions of the country. The objective was to identify capacity for meeting potential markets for improved quality Eritrean produce through the provision of necessary information on constraints and opportunities to potential investors, and a roadmap to Eritrean public- and private-sector stakeholders for improving the environment for marketing of horticultural products. Potential target crops included fruits such as banana, citrus, and mango; herbs and spices; high-value vegetables such as peppers; and cut flowers.

Study tour participants with Israeli horticulture producer

It was subsequently agreed to by USAID and the MOA that this assessment would become a volunteer assignment under the Virginia State University-run Farmer to Farmer program, of which ACDI/VOCA is a partner. The volunteer consultant will train the local counterparts in viability assessment methodology, act as team leader for the data collection component, and synthesize the information into a final report.

2. Banana component

Banana demonstration farm design

The major activity of the 2004-2005 REIP extensions was the construction of a five-hectare banana demonstration farm near Akkordat, which will serve as a model of proper banana production and post-harvest handling for farmers in the Gash Barka region. ACDI/VOCA engaged Mr. Leonel Castillo, a banana specialist based at the Honduran Agricultural Research Foundation, as a short-term consultant to assist in the design and construction of the demonstration farm. With ACDI/VOCA Local Project Coordinator Ms. Aster Yohannes and HQ-based staff Ms. Adina Saperstein acting as points of contact between Mr. Castillo and the technical MOA staff in Gash Barka, an initial design for the farm was prepared. Mr. Castillo provided the necessary information for the procurement of harvesting cableways and overhead wires for the bananas, as well as the components of a sprinkler irrigation system, and these items were ordered from specialty suppliers in South Africa and the US. In June 2004, the consultant traveled to Eritrea to conduct the preliminary groundwork for the construction of the demonstration plot, finalize the farm layout plan, and provide training in farm management.

Cableways which will transport harvested bananas to the packing station

Prior to commencing the field assessment and groundwork preparations for the banana demonstration farm, Leonel Castillo met with Director General of Agricultural Promotion and Development Department at the MOA Mr. Huruy Asghedom and Mr. Tzegay Berhane, Director of the MOA Halhale Research Station. The topics discussed included:

- The selected demonstration farm site (at Akkordat rather than Tekreret, as originally proposed)
- The absence of consideration of a packing station in the original proposal by the MOA for the demonstration farm
- The water well output at the farm site
- The availability of planting material at the Tekreret Research Station near Akkordat (approximately 5 hectares of Grand Nain and Williams plantlets for the demonstration farm)
- Present and future marketing strategies (stabilizing banana production year-round; possibility of organic markets)

While in Akkordat, Mr. Castillo verified the field layout and designs provided by the MOA, and subsequently redesigned the field map according to actual orientation coordinates and the boundary angles and measurements surveyed. He then redesigned the supporting infrastructure (overhead wires, irrigation laterals, and harvesting cableways) and made recommendations for additional cableway procurements.

Through communication with the MOA in Akkordat and ACDI/VOCA, as well as a comprehensive progress report, Mr. Castillo provided instructions on the construction of concrete blocks for the cableways and overhead wires, made recommendations on improving the output of the water well at the site, and provided estimates (based on information supplied by the MOA Engineering Unit) on materials and costs for the construction of a packing station, which was necessary for the farm to serve its intended purpose.

Irrigation system installation

In July 2004, Mr. Castillo returned to Eritrea along with AMANCO-Honduras irrigation specialist Mr. Melvin Mayes, who designed the farm's irrigation system, in order to supervise the installation of the system. The consultants directed the installation of the main line and valves as well as the assembly of three out of six irrigation blocks. The MOA hired laborers to dig irrigation trenches and lay the pipes. Mr. Castillo and Mr. Mayes had initially planned on staying through the whole installation, but delays in customs clearance of the materials postponed the start of the work. The final three irrigation blocks were completed under supervision of the MOA engineer after their departure. ACDI/VOCA then hired an irrigation engineer from Senninger, an American private-sector company with offices in South Africa, which had supplied the irrigation equipment, on a consultancy basis, to travel to Eritrea in early February 2005 to finish the irrigation system installation by calibrating the pressure regulating valves, connecting the pump to the mainline, and testing the entire system.

MOA engineer Yonas and hired laborers connect a main pipe to a submain

Banana production training

During his initial assignment, Mr. Castillo also provided instructions for proper seedbed management and banana husbandry to the MOA technician at the Tekreret Research Station, with the goal of turning the seedbed into a 'rapid corm multiplication plot,' producing sufficient good-quality corms for transplanting to the demonstration farm.

During this assignment, the banana consultant also conducted a one-day field workshop for approximately 40 farmers and MOA technical personnel. The farmers present were

primarily from Tekreret and Akkordat, but farm management personnel from Addi Omer Farm in Tessenei were also present. The four primary topics covered were:

- Ratooning and selection of ideal production followers ('sucker pruning')
- Hand pruning of young branches
- Irrigation
- Fertilization (chemical) and manuring (organic)

Mr. Castillo instructs the MOA on banana plant pruning

Both the farmers and the MOA staff expressed the need for further training, and demonstrated enthusiasm and a participative attitude throughout the workshop.

In July 2004, as they awaited the arrival of the irrigation materials, Mr. Castillo and Mr. Mayes organized several field workshops with small growers in Akkordat and two large shareholder estates in Tessenei on improved banana husbandry practices as well as modern irrigation systems and water management techniques. In conjunction with these workshops (and above and beyond their scope of work), they conducted pump tests of five water wells at the same farms in Akkordat and Tessenei in order to design the irrigation systems.

Johan Gerber, MOA staff and workers test the harvesting cableway mechanism.

Cableway and overhead wire installation

ACDI/VOCA contracted with Thomas Cableways to send Mr. Johan Gerber, an engineer from Rhino Cableways in South Africa, to Akkordat in October 2004 to oversee the installation of the cableways and overhead wires on the banana demonstration farm. Despite challenges posed by the late arrival of the materials caused by shipping and customs clearance constraints, as well as difficulties in securing committed laborers to perform the installation, Mr. Gerber was able to complete the installation prior to his departure.

Banana packing station construction

Although the original design for the demonstration plot did not include a banana packing shed on the site, the need for this was identified, and the Ministry of Agriculture reviewed bids and selected a contractor for the construction a packing station in October 2004. The construction was effectively completed by the end of the project in February 2005 and retention funds were given to the MOA for payment to the contractor after six months of operation.

CONCLUSION

After multiple program re-designs over its nine-year life span, the REIP program has come to an end, but its impact will continue to be felt by the four major project counterparts and by the farmers who are members or beneficiaries of these organizations. As a result of the project, the Commercial Bank of Eritrea has more efficient operations and increased outreach through a Credit Administration Department. The Rural Enterprise Unit has been equipped with thorough analyses of key sub-sectors, training modules for poultry and horticultural products, and the capacity to conduct its own sub-sector analyses as needed. The National Confederation of Eritrean Workers has both the ability and the technical resources necessary to formulate cooperative law and establish and strengthen rural cooperatives that are well managed and profitable for their farmer members. The Ministry of Agriculture has a modern demonstration farm for banana production and post-harvest handling, and key contacts in export markets for a variety of Eritrean horticultural products. Through these four counterparts, the REIP project has had—and will continue to have—substantial direct and indirect benefits for Eritrean farmers.